CRAWFORDSVILLE ELECTRIC LIGHT & POWER

At the last Electric Service Quality Workshop in September, Staff stated it would issue a short follow-up data request regarding power quality. The Commission recognizes that not everyone who receives this data request will have the experience or information to respond. However, we have circulated the data request to everyone so that everyone is aware of the on-going process related the electric service quality.

Over the course of the workshops we have discussed three broad categories of electric reliability problems: Sustained outages have been defined as interruptions in service lasting more than five minutes and requiring utility intervention to restore service; Momentary outages, for our purposes, have been identified as service interruptions of less than five minutes in which service is restored without utility intervention; Power Quality problems are deviations in the nature or character of the electricity which may affect the performance of customers' electric equipment.

1. From a customer's perspective, how are power quality problems usually described/identified, i.e. what does the customer complain about?
   Power quality problems are identified in a variety of manners.
   a.) <u>Residential and Small Commercial</u>
   The power quality issues associated with these two classes of customers are usually from voltage problems, either externally or internally. These customers usually complain about lights flickering and/or light bulbs failing early.
   b) <u>Large Commercial and Industrial</u>
   The power quality issues associated with these two classes of customers are usually more in depth than with residential and light commercial. Large commercial and industrial customer usually have large motors, variable frequency drives, sensitive production equipment, and computer operated controls. With these devices clean power is essential. Their complaints are usually generated from processes dropping out and equipment failures. These can be from either voltage problems or from transients generated both internally and externally.

2. Are the complaints and/or problems different for residential or small commercial customers versus large commercial or industrial customers? If so, please explain how the complaints are different.
   Please refer to answer to question #1.

3. What steps does your utility take to address power quality complaints?
   We handle power quality issues in a variety of ways depending on the nature of the problem. The first thing we do, no matter what lass of customer, is to meet with either the customer or the resident and talk to them about what the actual problem they are having is. We will then make suggestion as to the possible causes of the problem. Normally for voltage related issues we will set a recording meter at the service entrance and also in either the residence or the business. We will then inform the customer to keep track of any instances that the problem occurs. We normally will leave this recorder out for 2-5 days. After we pick up the recorder and any additional information from the customer, we will analyze the data that we received and determine if it is a utility or customer generated problem. If it is a utility problem, we will normally fix it within a couple of business days. If it is a customer problem, we will work with the customer to determine the source of the problem and help with suggestions on how to render a solution. In some instances with large commercial and industrial customers we will consult with an outside source to help determine the problem. These types of problem are normally associated with harmonics and internal transients.

4. Does your customer call center categorize power quality complaints separately?

   - If so, how many power quality complaints have there been in the last 12 months? How were these complaints resolved?
   - If not, please estimate how many power quality complaints there has been over the last 12 months and how they were resolved.

   Our customer call center does not categorize power quality complaints separately.

5. Are there actions customers can take to insulate their equipment from power quality problems? If so, please explain what actions could be taken.
   Some actions that customers can take to isolate themselves from power quality problems are to purchase surge protection, power conditioners, and/or UPS systems.